



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,096	01/20/2004	Yoshihiro Shona	OKI.635	6947

20987 7590 06/28/2006

VOLENTINE FRANCOS, & WHITT PLLC
ONE FREEDOM SQUARE
11951 FREEDOM DRIVE SUITE 1260
RESTON, VA 20190

EXAMINER

ROJAS, MIDYS

ART UNIT	PAPER NUMBER
----------	--------------

2185

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/759,096	SHONA, YOSHIHIRO	
	Examiner	Art Unit	
	Midys Rojas	2185	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1/20/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 1/20/04 has been considered by the examiner.

Drawings

3. The drawings filed on 1/20/04 have been accepted by the examiner.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Noya (6,513,142).

Regarding Claim 1, Noya discloses a method of writing rewrite data over existing data in a memory (Col. 3, lines 1-6, “new block is written over the old block in the disk array”), the memory having a sector partitioned into a plurality of areas (online disk 116 or 117, Figure 1), the existing data being written at a same position in the respective areas (original block of data is stored within disk, Col. 2, lines 55-67), the method comprising: taking an exclusive-OR of the

Art Unit: 2185

rewrite data and existing data at a target position in a first area (“The cached original and new blocks of data are combined using the XOR function to derive a first result...”); taking an exclusive-OR of the exclusive-OR data, which is obtained by the previous exclusive-OR process, and existing data at the target position in a second area (“The first result is then combined by the XOR function with the original distributed parity block to derive a data difference...”); and performing a similar exclusive-OR process up to a final area (since the original and new data may comprise more than one block of data, the XOR operation must be performed for each block of data), wherein in the course of repeating these exclusive OR processes, when the data at the target position in the area concerned are an initial value, then the most recent exclusive-OR data are written to the target position in the area concerned (“...if the data difference is non-zero... the new block is written over the old block in the disk array... and the data difference is overwritten as the new parity”, Col. 3, lines 1-6).

Regarding Claim 2, Noya discloses a method of writing rewrite data over existing data wherein if there is no initial value when the exclusive-OR process is carried out up to the final area (instance where the original data is zero, or the locations are empty), then for a same position in each of the areas, an exclusive-OR of data in the first area and data in the second area is taken (XOR of the original data that has been cached and the new data that has been cached, “The cached original and new blocks of data are combined using the XOR function to derive a first result...”, Col. 2, lines 55-67) , an exclusive-OR of the resulting exclusive-OR data and data in a third area is taken (“The first result is then combined by the XOR function with the original distributed parity block to derive a data difference...”), and a similar exclusive-OR process is performed up to the final area (since the original and new data may comprise more than one

Art Unit: 2185

block of data, the XOR operation must be performed for each block of data) so that all data within the sector are read (“the original block of data is read from the disk and also cached...”) and the data at the target positions are changed to the rewrite data (“...if the data difference is non-zero... the new block is written over the old block in the disk array... and the data difference is overwritten as the new parity”, Col. 3, lines 1-6. Since the initial values are zero [non initial values], then the data difference will be non-zero), and then, all the data within the sector are erased and all new data, including the rewrite data, are written to the first area in the sector (in writing the new data in to the target memory, the previously stored data is erased from the memory and replaced with the new data).

Claim 3 is rejected using the same rationale as that of Claim 1.

Claim 4 is rejected using the same rationale as that of Claim 2.

Claim 5 is rejected using the same rationale as that of Claim 1 wherein the pointer sector is represented by container configurations tables in the container layer 120 which allow the system to partition the disk drives and refer to the partitions when accessing (Col. 4, lines 1-8). Therefore, in accessing specific areas in memory, such as the original data, the cached new data, and the parity data, these are referred to as first, second, and third pointer data. Since ultimate data number are representative of pointer values, the existing data are read from the area of the sector based on the pointer values.

Claim 6, is rejected using the same rationale as that of Claim 1 and 2.

Claim 7 is rejected using the same rationale as that of Claim 1 wherein the selector sector is the cache memory 250 and the selector data being used to select between the sectors is represented by the write request from the host which prompts the writing of the new data and the

Art Unit: 2185

original data to be written to cache and therefore selects the location of the old data, which in turn selects the sector in question (Col. 4, lines 40-67 and Col. 2, lines 55-67).

Claim 8 is rejected using the same rationale as that of Claim 2 wherein the sector selection data is incremented by one in representation of obtaining the next write request from the host.

Claim 9 is rejected using the same rationale as that of Claim 1 wherein incrementing the sector selection data, the system is obtaining and starting to process the next write request from the host, and so, the steps of Claim 1 must be repeated for this new write request.

Regarding Claim 10, Noya discloses a method of rewriting data in two memories (116, 117), each of the two memories having a sector (partitions), the sector having a plurality of areas to which data are written and a control area to which memory selection data and area designation data are written (configurations tables 120, Col. 4, lines 1-8), the method comprising:

A) selecting one of the two memories based on memory selection data in the control areas of the two memories (selector data being used to select between the memories and sectors is represented by the write request from the host which prompts the writing of the new data and the original data to be written to cache and therefore selects the location of the old data, which in turn selects the sector in question, Col. 4, lines 40-67 and Col. 2, lines 55-67);

B) writing rewrite data to an area determined by the area designation data in the control area of the selected memory (“...if the data difference is non-zero... the new block is written over the old block in the disk array... and the data difference is overwritten as the new parity”, Col. 3, lines 1-6);

C) erasing data in the areas of the other memory in a piecemeal manner (“new data block and associated parity.. are discarded from the cache”, Col. 5, lines 45-64);

D) repeating the steps B and C until the rewrite data are written to all the areas of the selected memory, such that erasing of the data within all the areas of the other memory is completed when the rewrite data are written to all the areas of the selected memory (since the original and new data may comprise more than one block of data, the rewriting operation must be performed for each block of data); and

E) switching the roles of the two memories and repeating the steps B, C and D so that the rewrite data are written to the two memories (wherein the switching of the memories is controlled by the instruction to write a certain data block, which may indicate that the new data block must be written in the other memory).

Regarding Claim 11, Noya discloses the method of rewriting data in two memories, wherein a cache memory 250 is provided in addition to the two memories, so that when the rewrite data is written to one of the two memories, the same rewrite data are also written to the cache memory, and wherein when the rewritten data should be read from that memory, the rewrite data are read from the cache memory, not from that memory (Col. 2, lines 55-67).

Claim 12 is rejected using the same rationale as that of Claim 5.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Midys Rojas whose telephone number is (571) 272-4207. The examiner can normally be reached on M-F 5:30am - 4:00pm.

Art Unit: 2185

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (571) 272-4210. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Midys Rojas

Midys Rojas

Examiner

Art Unit 2185

MR

Mano Padmanabhan
6/25/06

MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER